

INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 2002	Park: Shenandoah NP
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Permit#: SHEN-2001-SCI-0017	
Park-assigned Study Id. #: SHEN-00265	
Project Title: ASSESSMENT OF VEGETATION COMMUNITIES IN RELATION TO ECOLOGICAL UNITS WITHIN SHENANDOAH NATIONAL PARK	
Permit Start Date: Jan 01, 2001	Permit Expiration Date Sep 30, 2004
Study Start Date: Jan 01, 2001	Study End Date Sep 30, 2004
Study Status: Continuing	
Activity Type: Research	
Subject/Discipline: Plant Communities (Vegetation)	
Objectives: <p>The overall objective of this project is to assess the distribution of vegetation communities in SHEN in relation to ecological units defined by terrain and landscape structure. Supporting and concurrent objectives include 1) classification of vegetation communities into a USNVC schema using data collected at field plots, 2) research and development of ecological gradient models based on terrain analysis, 3) investigations of newly available remote sensing technology for mapping vegetation to the USNVC, 4) construction of a statistical model that predicts the distribution of USNVC vegetation classes from field plots, terrain-based ecological gradient models, and vegetation spectral responses mapped from satellite imagery, 5) model and delineate riparian and wetland areas of the park, and 6) conduct a statistically valid accuracy assessment of vegetation classifications and ecological models.</p>	
Findings and Status: <p>Project activities continued on schedule for FY02. Progress was made in the following areas during FY02: 1) Remote sensing: We contracted with a commercial firm to scan 154 1:24,000 aerial photos covering SHEN from the flight we had flown in FY01. This data is a primary source for mapping for this project. We georegistered each image using an orthorectification procedure for planimetric accuracy. Additional rectification, image mosaic, and interpretation activities will continue in FY03 using this data. Additional image data sources were acquired and pre-processed including AVIRIS hyperspectral data, additional Landsat 7 data, Hyperion experimental hyperspectral data, and ASTER satellite data. We began prototyping vegetation polygon mapping using newly available image segmentation software (eCognition) that eliminates the need for manual interpretation of stand boundaries. This effort will continue in FY03. We also contracted with the University of Maryland, Appalachian Laboratory to replace remote sensing assistance lost when a term Remote Sensing Specialist resigned. This cooperative agreement (through the CESU) will enhance our ability to exploit hyperspectral and radar imagery for this project. We also began vegetation community data analysis and statistical comparison with environmental gradients in FY02. Vegetation community analysis from data we collected at 105 plots in FY01 is ongoing by Va. Natural Heritage and Natureserv, and we have been coordinating with these groups to receive the resulting vegetation community descriptors. Vegetation community (e.g. "association") descriptors are expected in Spring 2003. 2) Field sampling: In order to meet the riparian and wetland mapping objective, we placed 37 additional field plots in areas predicted to be wetland or riparian from our ecological land unit model developed in FY01. These plots were sampled by a joint USGS-NPS-Va. Natural Heritage crew for complete vegetation identification, soil sampling, and fire fuels sampling. Additionally, we revisited 27 sampling stations with the UMD team to acquire additional ground information for remote sensing investigations including canopy cover, hemispherical canopy</p>	

photography, tree diameters, and heights. 3) Predictive vegetation modeling: We successfully prototyped predictive vegetation modeling of individual species found at field sites using variables gleaned from GIS-based spatial models. We developed methods for applying Mahalanobis distance predictor models using techniques developed by Frank van Manen (USGS). This technique and Classification and Regression Tree methods are being further investigated in FY03 and automated routines are under development to predict the distribution of all species found, and to predict the composition of vegetation communities.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?

No

Funding provided this reporting year by NPS:

0

Funding provided this reporting year by other sources:

96000

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college

Full name of college or university:

n/a

Annual funding provided by NPS to university or college this reporting year:

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